

Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

5 1. (currently amended) A transmission power control method for controlling the power to transmit to a distant party, comprising the steps of:

 controlling an adjustable digital-to-analog converter for generating an analog baseband signal to be input to a modulator for frequency-converting a transmission signal to a signal in an IF band, and
10 controlling a plurality of variable power amplifiers for variably amplifying the transmission signal modulated by the modulator for transmission without further modulation.

15 2. (previously presented) A transmission power control method according to claim 1, wherein a control ratio of the variable power amplifiers is modified and at least one of series and parallel control in a control range is made in the controlling a plurality of variable
20 power amplifiers step.

 3. (original) A transmission power control method according claim 2, further comprising:

 a detection step of detecting a state of at least one of a local
25 station and a distant station; and
 a modification step of modifying the control ratio according to
 the detected state.

30 4. (previously presented) A transmission power control method according to claim 3, wherein a plurality of states of at least one of the local station and the destination station are detected in the detection step, and wherein the control ratio is modified by using

5 fuzzy control rules and fuzzy inference that are based on the plurality of states in the modification step.

10 5. (original) A transmission power control method according to claim 3, wherein the control ratio according to the state of at least one of the local station and the distant station is adaptively modified in the modification step.

15 6. (original) A transmission power control method according to claim 1, wherein a control sensitivity of each of the plurality of variable power amplifiers differs from each other.

20 7. (previously presented) A transmission power control method for controlling a power to transmit to a distant party, comprising the steps of:

controlling a plurality of voltage controllers; and

25 controlling, using said plurality of voltage controllers, a power amplifier for amplifying a transmission signal via separate bias systems.

30 8. (previously presented) A transmission power control method according to claim 7, wherein a control ratio of the voltage controllers is modified and at least one of series and parallel control in a control range is made in the voltage controller controlling step.

35 9. (previously presented) A transmission power control method according to claim 8, further comprising:

 a detection step of detecting a state of at least one of a local station and a distant station; and
 a modification step of modifying the control ratio according to the detected state.

40 10. (previously presented) A transmission power control method according to claim 9, wherein a plurality of states of at least one of the local station and the destination station are

5 detected in the detection step, and wherein the control ratio is modified by using fuzzy control rules and fuzzy inference that are based on the plurality of states in the modification step.

11. (original) A transmission power control method according to
10 claim 9, wherein the control ratio according to the state of at least one of a local station and a distant station is adaptively modified in the modification step.

12. (original) A transmission power control method according to
15 claim 7, wherein a control sensitivity of each of the plurality of variable power amplifiers differs from each other.

13. (currently amended) A radio communications apparatus equipped with a transmission power control feature for controlling a
20 transmission power to be transmitted to a distant station, comprising:
a variable power amplification unit including:

an adjustable digital-to-analog converter for generating an
analog transmission signal,

25 a modulator for inputting said analog transmission signal and frequency-converting the transmission signal to a signal in an IF band,

and a plurality of variable power amplifiers for variably amplifying the transmission signal modulated by the modulator for transmission without further modulation;
30 and

a variable power amplification control unit for controlling the variable power amplification unit.

34 14. (previously presented) Radio communications apparatus
35 according to claim 13, wherein the variable power amplification control
36 unit modifies a control ratio of the variable power amplifiers and makes
37 at least one of series and parallel control in the control range.

15. (previously presented) Radio communications apparatus
40 according to claim 14, further comprising:

5 a state detection unit for detecting a state of at least one of a
 local station and a distant station, wherein
 the variable power amplification control unit modifies the control
 ratio according to the detected state.

10 16. (previously presented) Radio communications apparatus
 according to claim 15, wherein the variable power amplification control
 unit modifies the control ratio based on fuzzy control rules and fuzzy
 inference.

15 17. (original) Radio communications apparatus according to claim
 15, wherein the variable power amplification control unit adaptively
 modifies the control ratio according to the state of at least one of a
 local station and a distant station.

20 18. (original) Radio communications apparatus according to claim
 13, wherein a control sensitivity of each of the plurality of variable
 power amplifiers differs from each other.

25 19. (currently amended) A radio communications apparatus equipped
 with a transmission power control feature for controlling a transmission
 power to be transmitted to a distant station, comprising:
 a power amplifier having separate bias systems for amplifying a
 transmission signal;
 a plurality of voltage controllers for controlling the power
 amplifier via the separate bias systems; and
 30 a control unit for controlling the plurality of voltage
 controllers .

20 20. (original) Radio communications apparatus according to claim
 19, wherein the control unit for controlling voltage controllers
 modifies a control ratio of the voltage controllers and make at least
 one of series and parallel control in the control range.

40 21. (original) Radio communications apparatus according to claim
 20, further comprising:

5 a detection unit for detecting a state of at least one of a local station and a distant station wherein the control unit for controlling voltage controllers modifies the control ratio according to the detected state.

10 22. (previously presented) Radio communications apparatus according to claim 21, wherein the control unit for controlling the voltage controllers modifies the control ratio based on fuzzy control rules and fuzzy inference.

15 23. (original) Radio communications apparatus according to claim 21, wherein the control unit for controlling the voltage controllers adaptively modifies the control ratio according to the state of at least one of a local station and a distant station.

20 24. (original) Radio communications apparatus according to claim 19, wherein the control sensitivity of each of the plurality of variable power amplifiers differs from each other.

25 25. (previously presented) A transmission power control method for controlling the power to transmit to a distant party, comprising the steps of:

30 controlling an adjustable digital-to-analog converter for generating an analog baseband signal to be input to a modulator for frequency-converting a transmission signal to a signal in an IF band;

controlling first and second variable power amplifiers, connected in series with each other, for variably amplifying the transmission signal modulated by the modulator;

35 a detection step of detecting a state of at least one of a local station and a distant station; and

a modification step of modifying control ratios of the first and the second variable power amplifiers according to the detected state;

5 wherein at least one of series and parallel control in a control
range is made in the controlling the first and second
variable power amplifiers step, and wherein, in the series
control, the control ratio of the first variable amplifier is
set to 1 and the control ratio of the second variable
10 amplifier is set to 0, and wherein, in the parallel control,
a sum of the control ratios of the first and second variable
amplifiers is set to 1.

15 26. (previously presented) A transmission power control method
according to claim 25, wherein a plurality of states of at least one of
the local station and the destination station are detected in the
detection step, and wherein the control ratios are modified by using
fuzzy control rules and fuzzy inference that are based on the plurality
of states in the modification step.

20 27. (previously presented) A transmission power control method
according to claim 25, wherein the control ratios according to the state
of at least one of the local station and the distant station is
adaptively modified in the modification step.

25 28. (previously presented) A transmission power control method
according to claim 25, wherein a control sensitivity of each of the
first and second variable power amplifiers differs from each other.

30 29. (previously presented) A transmission power control method for
controlling a power to transmit to a distant party, comprising the steps
of:

35 controlling first and second voltage controllers;
 controlling, using said first and second voltage controllers, a
 power amplifier for amplifying a transmission signal;
 the first voltage controller controlling a collector voltage of
 the power amplifier, the second voltage controller
 controlling a base voltage of the power amplifier;

5 a detection step of detecting a state of at least one of a local
 station and a distant station; and

 a modification step of modifying control ratios of the first and
 the second voltage controllers according to the detected
 state;

10 wherein at least one of series and parallel control in a control
 range is made in the voltage controller controlling step,
 wherein, in the series control, the control ratio of one of
 the voltage amplifiers controllers is set to 1 and the
 control ratio of the other is set 0, and wherein, in the
 parallel control, a sum of the control ratios of the first
 and second voltage controllers is set to 1.

15

20 30. (previously presented) A transmission power control method
 according to claim 29, wherein a plurality of states of at least one of
 the local station and the destination station are detected in the
 detection step, and wherein the control ratios are modified by using
 fuzzy control rules and fuzzy inference that are based on the plurality
 of states in the modification step.

25 31. (previously presented) A transmission power control method
 according to claim 29, wherein the control ratios according to the state
 of at least one of a local station and a distant station are adaptively
 modified in the modification step.

30 32. (previously presented) A radio communication apparatus
 comprising:

 a first variable power amplifier;

 a second variable power amplifier connected in series with said
 first variable power amplifier;

35 an adjustable digital-to-analog converter;

 a modulator;

5 means for controlling the adjustable digital-to-analog converter
 for generating an analog baseband signal to be input to the
 modulator for frequency-converting a transmission signal to a
 signal in an IF band;

10 means for controlling first and second variable power amplifiers
 for variably amplifying the transmission signal modulated by
 the modulator;

 a detection unit for detecting a state of at least one of a local
 station and a distant station; and

15 means for modifying control ratios of the first and the second
 variable power amplifiers according to the detected state,

 wherein at least one of series and parallel control in a control
 range is utilized by the means for controlling the first and
 second variable power amplifiers, and wherein, in the series
 control, the control ratio of the first variable amplifier is
20 set to 1 and the control ratio of the second variable
 amplifier is set to 0, and wherein, in the parallel control,
 a sum of the control ratios of the first and second variable
 amplifiers is set to 1.

25 33. (previously presented) The apparatus of claim 32, wherein a
 plurality of states of at least one of the local station and the
 destination station are detected by the detection unit, and wherein the
 control ratios are modified by using fuzzy control rules and fuzzy
 inference that are based on the plurality of states in the means for
30 modifying.

35 34. (previously presented) The apparatus of claim 32, wherein the
 control ratios according to the state of at least one of the local
 station and the distant station is adaptively modified in the means for
 modifying.

5 35. (previously presented) The apparatus of claim 32, wherein a
control sensitivity of each of the first and second variable power
amplifiers differs from each other.

10 36. (previously presented) A radio communication apparatus
comprising:

 a first voltage controller;

 a second voltage controller;

 means for controlling said first and said second voltage
 controllers;

15 a power amplifier for amplifying a transmission signal;

 means for controlling, using said first and second voltage
 controllers, said power amplifier, wherein the first voltage
 controller controls a collector voltage of the power
 amplifier and the second voltage controller controls a base
20 voltage of the power amplifier;

 a detection unit for detecting a state of at least one of a local
 station and a distant station; and

 means for modifying control ratios of the first and the second
 voltage controllers according to the detected state;

25 wherein at least one of series and parallel control in a control
 range is made in the means for controlling said first and
 said second voltage controllers, wherein, in the series
 control, the control ratio of one of the voltage controllers
 is set to 1 and the control ratio of the other is set 0, and
30 wherein, in the parallel control, a sum of the control ratios
 of the first and second voltage controllers is set to 1.

35 37. (previously presented) The apparatus of claim 36, wherein a
plurality of states of at least one of the local station and the
destination station are detected by the detection unit, and wherein the
control ratios are modified by using fuzzy control rules and fuzzy

5 inference that are made based on the plurality of states by the means
for modifying.

38. (previously presented) The apparatus of claim 36, wherein
the control ratios according to the state of at least one of a local
10 station and a distant station are adaptively modified by the means for
modifying.